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SELECTION OF PATIENTS FOR MINIMALLY INVASIVE SURGERY

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SELECTION OF PATIENTS FOR MINIMALLY INVASIVE SURGERY (MIS)

Minimally invasive is a term widely used in spine surgery and includes injection techniques, percutaneous and endoscopic procedures as well as open surgical procedures . The philosophy of MIS can be also transmitted in an open procedure.

SELECTION OF PATIENTS FOR MIS

Objectives for MIS

- Objectives are representation of the pathology and cause of pain
- Implementation of an therapeutic intervention with minimal access trauma and sparing the healthy surrounding tissue

SELECTION OF PATIENTS FOR MIS

Assessment of the patient

- Medical and pain history: The precise and differentiated questioning of a patient suffering from pain is difficult but absolutely necessary to get a working hypothesis leading to a therapy selection.
- Examination (Lasègue sign?, Pseudo-?)
- Diagnostic tools (X-rays, MRI, Injections)
- Selection of therapy (non-operative, stabilization : fusion, non-fusion ?)

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Mandatory questions

- Low back pain without radiation ?
- LBP with radiation to the buttocks, groin or proximal thigh ?
- Share of back and leg pain in the total pain ?
- Pain radiation: pseudoradicular or radicular?
- Pain increases while walking (LBP and/or Leg pain)? Feeling of thumbness and weakness in the legs ?
- Nocturnal pain when turning (segment instability) ?
- Sitting and standing position are impaired ?

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Examination (objective findings)

- **Straight leg raising test (Lasègue)** to determine a radicular pain (pathology of the spinal nerve root)
- **Motor testing:** Myotomes frequently involved in lumbosacral pathology – gastroc-soleus (S1), hamstrings (S1), gluteus maximus (S1), anterior tibialis, big toe extensor and gluteus medius (L5) and quadriceps (L2-4)

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Examination

- **Sacroiliac joint** (repeatidly you find a pathology causing low back pain)
- **Hip joint** (radiation to the groin, lateral hip area and knee joint (obturatorius nerve) sometimes seems to be caused by LBP)
- **Lot of tests** to assess segmental unit and muscle dysfunction (each surgeon should value how to get most information in short time)

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Diagnostic tools

- X-rays ap. and lateral view in standing position: lumbosacral angle- pelvic tilt, pelvic obliquity – scoliosis, disc height, density of the vertebral bone
- Flexion - Extension X-rays : macroinstability such as anterolisthesis or retrolisthesis

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Diagnostic tools

- **MRI :** disc pathology (Modic-signs,herniated disc), spinal stenosis, presence of synovial cysts, thickness of flavum ligament, facet joint changes
- **CT scan :** sometimes helpful in classifying the degree of facet joint osteoarthritis or recognizing an osseous foraminal stenosis

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Diagnostic tools, semi-invasive

- **Discography (distension test)** : high false positive rate; no stand-alone test ; risc of infection
- Discography can be used in cases of equivocal MRI findings
- To assess the pain response at levels adjacent to proven abnormal discs

Matter of discussion?

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Diagnostic tools, semi-invasive

- **Facet injections (fluoroscopic controlled):** no diagnostic tool for operative surgery ; possibility to identify the facet joint as a sole or additional source of pain
- **Periradicular injections (fluoroscopic controlled)** goal is to exclude or demonstrate the radicular pain component.

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M 55y , Diabetes, obesity, coronar disease
recurrent LBP years ago, severe increasing pain 6 months ago, weakness, thumbness in the legs and LBP when walking, sitting and standing are impaired, nocturnal back pain when turning

MRI : black disc L4/5, relative spinal stenosis, facet hypertrophy with osteoarthritis, synovitis

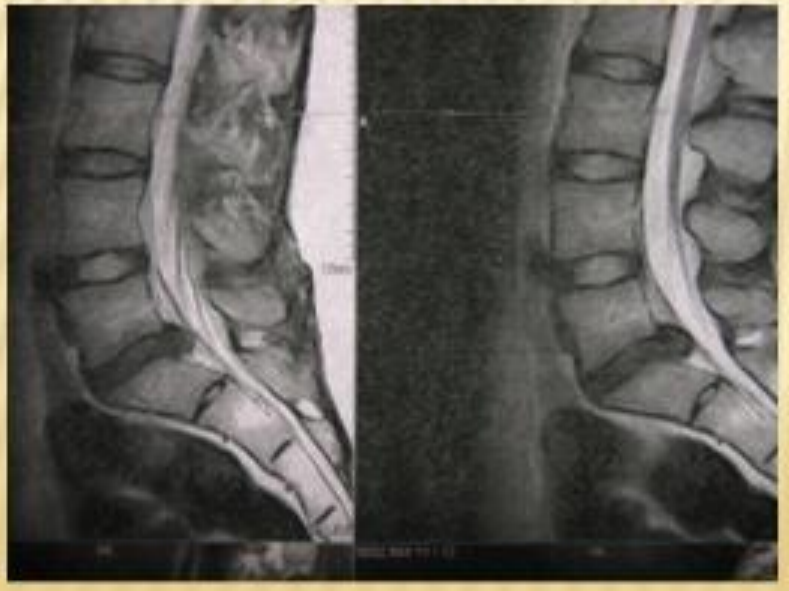
Therapy : no adequate treatment up to now - facet joint injections are planned

SELECTION OF PATIENTS FOR MIS

W 25y , recurrent tolerable LBP 5y ago, 1. episode of acute back pain for 6 weeks, pain killers and infusions with decreasing complaints, back pain: leg pain (70:30%), Pseudolase`gue sign both sides , at work now ,no medication at time

MRI: herniated disc medially, black disc

Therapy: back gymn in painfree interval

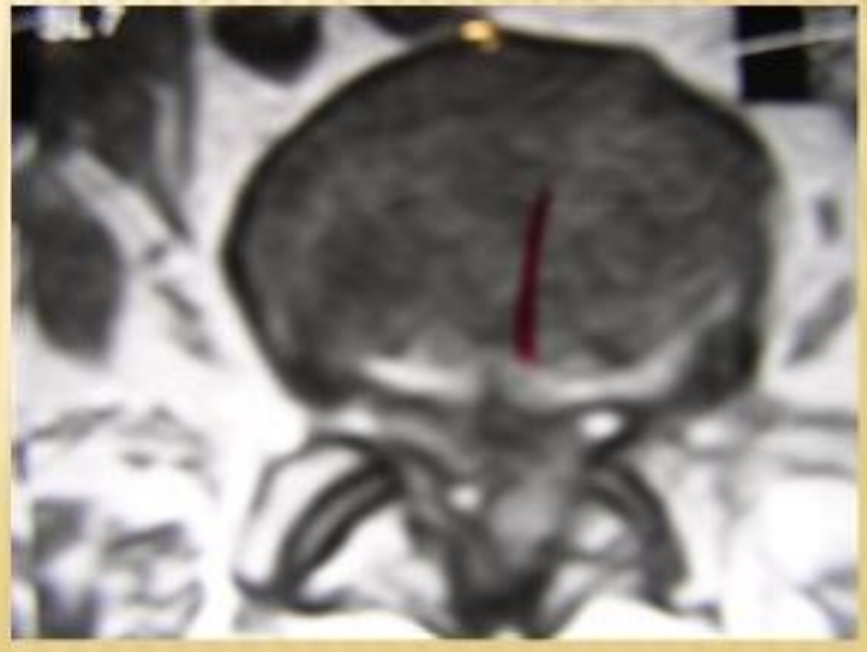


PATIENT SELECTION FOR MIS

W 62y

Neurogenic claudication, nerve root L5 compromised, glut.medius weakness, Leg pain > back pain, severe pain > 3 months

severe lumbar stenosis caused by disc herniation, hypertrophy of lig. Flavum, synovial joint cyst L4/5



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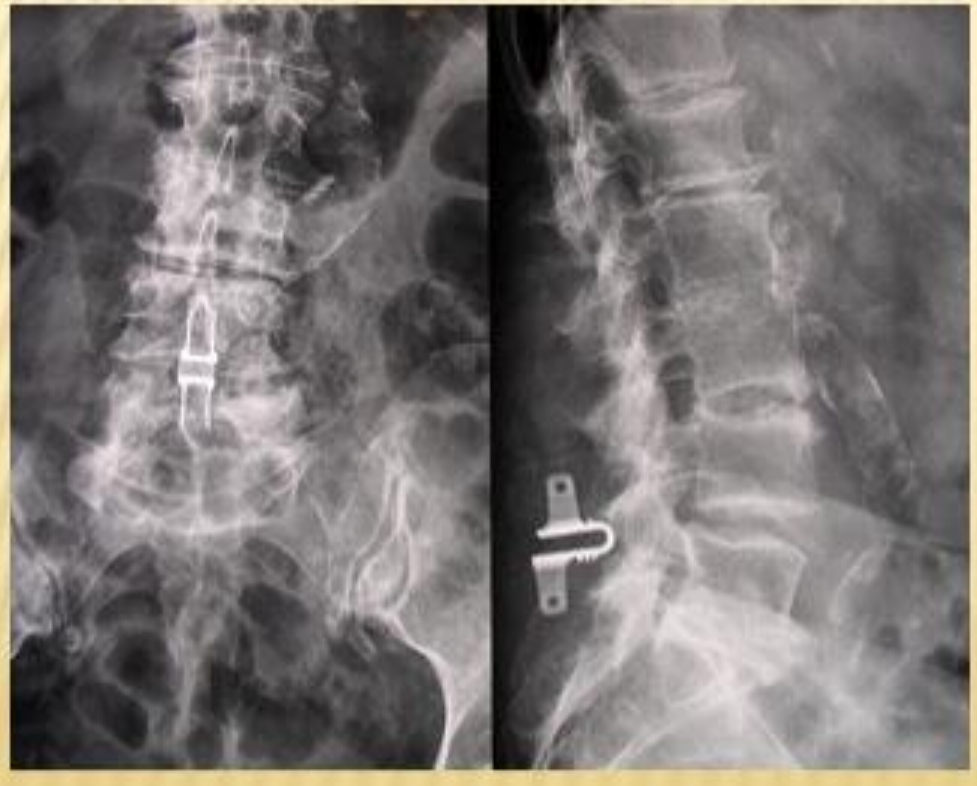
Clear indication: interlaminar decompression, resection of the cyst and partial facet joint, without discectomy
For „restabilization“ insertion of an interspinous spacer supporting disc and facet joint



SELECTION OF PATIENTS FOR MIS

M 37y LBP with radiation pseudoradicularly 5 years ago , conservative treatment > 6 months without improvement, facet blocks L4/5 with short time efficiency for LBP

MRI: black disc, protrusion L4/5, loss of disc space height, less facet degeneration

Diagnosis: symptomatic degenerative disc disease (DDD)

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Preop. Recognitions: discogenic pain, less facet joint pain,
MRI findings: black disc, low grade osteoarthritis of the facets

Indication for total disc replacement is possible – **but** -
Prior abdominal surgery ,obesity - decision for dynamic stabilization with interspinous spacer L4/5 (1y po)
Patient returned to work, completly satisfied with treatment

SELECTION OF PATIENTS FOR MIS

W 42y back pain 10y ago, pain increase 2y ago despite intensive conservative treatment ,back pain : leg pain (80:20%) , noturnal pain

X-ray: Osteochondrosis L4/5 , monosegmental disc pathology, progressive facet osteoarthritis , MRI: modic changes 2°

SELECTION OF PATIENTS FOR MIS

Clear indication for lumbar interbody fusion (TLIF) L4/5 with a Titanium cage(Plasmapore coated) completed by posterior instrumentation
15 mos po, no low back pain, returned to work

Selection of Patients for Mis

W, 35y MRI 2/2001: medial disc herniation, black disc, Modic 1° L5/S1 and L2/3, less facet osteoarthritis L5/S1

Selection of Patients for MIS

2y po (2003), constrained prosthesis (Prodisc)

Indication for Total disc replacement

Patient´s inclusion criteria:

1) Degenerative disc disease

2) Low back pain for 5y, inreased for 1y, conservative treatment for > 6mos without significant improvement

3) MRI: black disc, less facet degeneration , remaining disc height of 5mm, no irregular endplates, no osteophytes

(„Da Vinci“ – supine position)

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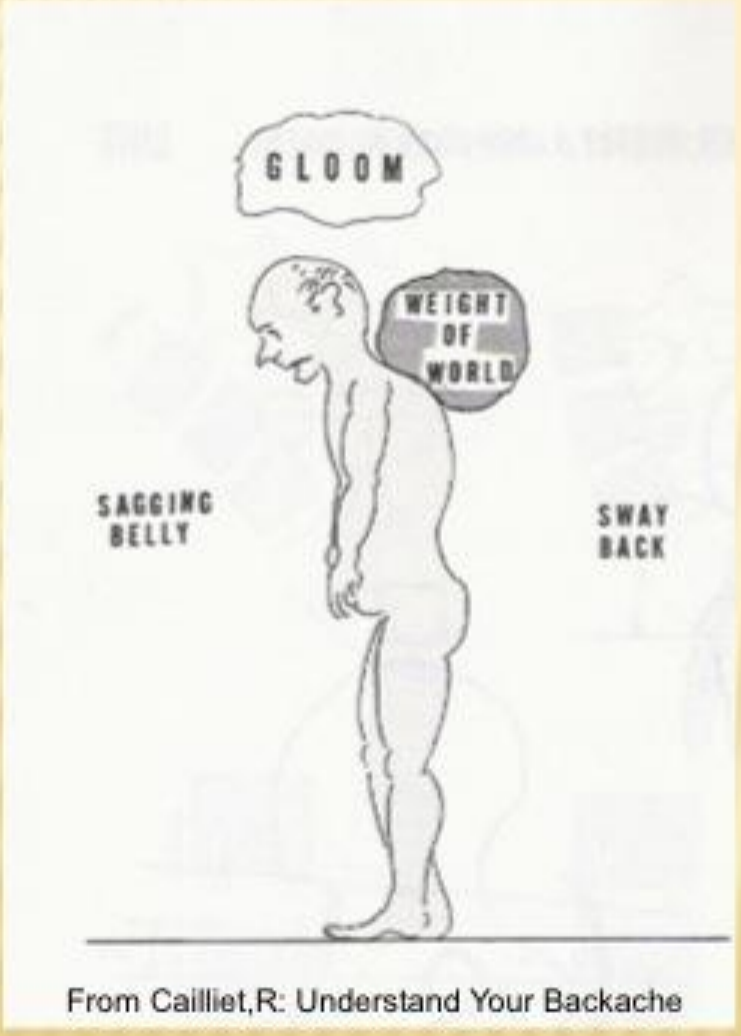

From Cailliet,R: Understand Your Backache

Minimally invasive open spine procedures have the known advantages (less postop. pain, less blood loss, faster mobilization, shorter hospital stay et ct.)
Nevertheless, a strict patient selection is required to obtain better results, especially in cases of **symptomatic DDD**.

High expectation of the patient for MIS and rapid solution of the complaints represent a big challenge also for an experienced surgeon.

THANK YOU !